

CLAIMS

We claim:

1. In a communication system comprising at least two peers that communicate with each other across an intermediate network comprising at least one infrastructure element, a method for an infrastructure element of the at least one infrastructure element to establish communications between two peers of the at least two peers, the method comprising:

monitoring at least a portion of messages exchanged between the two peers for control messages;

storing at least some parameters corresponding to the control messages exchanged between the two peers to provide stored parameters;

detecting occurrence of retransmission of a control message from one of the two peers, wherein the retransmission of the control message will lead to duplicate negotiations between the two peers; and

processing the retransmission of the control message based on the stored parameters such that the duplicate negotiations are avoided.

2. The method of claim 1, wherein the control messages comprise point-to-point protocol control messages.

3. The method of claim 1, wherein the communication system comprises a wireless communication system, the at least two peers comprising at least one wireless

communication unit in communication with at least one interworking unit via the intermediate network, and wherein the control message is sent from a wireless communication unit of the at least one wireless communication unit.

4. The method of claim 1, wherein the communication system comprises a wireless communication system, the at least two peers comprising at least one wireless communication unit in communication with at least one interworking unit via the intermediate network, and wherein the control message is sent from an interworking unit of the at least one interworking unit.
5. The method of claim 1, wherein processing of the retransmission of the control message further comprises discarding the retransmission of the control message.
6. The method of claim 1, wherein processing of the retransmission of the control message further comprises acknowledging the retransmission of the control message.
7. The method of claim 1, further comprising, prior to detecting the retransmission of the control message:
 - detecting transmission of data by each of the two peers; and
 - discarding the stored parameters in response to detecting the transmission of data by each of the two peers.

8. A machine-readable medium having stored thereon machine-executable instructions for carrying out the method of claim 1.

9. In a communication system comprising at least two peers that communicate with each other across an intermediate network comprising at least one infrastructure element, a method for an infrastructure element of the at least one infrastructure element to establish communications between a first peer and a second peer of the at least two peers, the method comprising:

receiving, from the first peer, a request control message targeted to the second peer;

storing parameters from the request control message to provide stored request control message parameters;

forwarding the request control message to the second peer;

receiving, from the first peer, a retransmission of the request control message targeted to the second peer; and

processing the retransmission of the request control message based on the stored request control message parameters.

10. The method of claim 9, wherein the request control message and the retransmission of the request control message comprise point-to-point protocol control messages.

11. The method of claim 9, wherein processing of the retransmission of the control message further comprises discarding the retransmission of the control message.

12. The method of claim 9, wherein processing of the retransmission of the control message further comprises acknowledging the retransmission of the control message.

13. The method of claim 9, further comprising, prior to receiving the retransmission of the first request control message:

detecting transmission of data by each of the first peer and the second peer; and
discarding the stored request control message parameters in response to detecting the transmission of data by the first peer and the second peer.

14. A machine-readable medium having stored thereon machine-executable instructions for carrying out the method of claim 9.

15. An apparatus for use in an intermediate network forming a part of a communication system, the communication system comprising at least two peers that communicate with each other across the intermediate network, the apparatus comprising:

at least one processor; and
at least one storage device, coupled to the at least one processor, having stored thereon instructions that, when executed by the at least one processor, cause the at least one processor to:

monitor at least a portion of messages exchanged between two peers of the at least two peers for control messages;

store, in the at least one storage device, at least some parameters corresponding to the control messages exchanged between the two peers to provide stored parameters;

detect occurrence of retransmission of a control message from one of the two peers, wherein the retransmission of the control message will lead to duplicate negotiations between the two peers; and

process the retransmission of the control message based on the stored parameters such that the duplicate negotiations are avoided.

16. The apparatus of claim 15, wherein the control messages comprise point-to-point protocol control messages.

17. The apparatus of claim 15, wherein the at least one storage device further comprises instructions that, when executed by the at least one processor, cause the at least one processor to:

process the retransmission of the control message by discarding the retransmission of the control message.

18. The apparatus of claim 15, wherein the at least one storage device further comprises instructions that, when executed by the at least one processor, cause the at least one processor to:

process the retransmission of the control message by acknowledging the retransmission of the control message.

19. A base station controller embodying the apparatus of claim 15.
20. A mobile switching center embodying the apparatus of claim 15.